



MOTOROLA

MTR2000™

**Base Station, Repeater
and Receiver**

**For Analog Conventional,
and Trunking Systems
800 and 900 MHz**



Instruction / Field Service Manual

68P81096E90-F

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FCC INTERFERENCE WARNING

The FCC requires that manuals pertaining to Class A and Class B computing devices must contain warnings about possible interference with local residential radio and TV reception. This warning reads as follows:

NOTE: The equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial or residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with its instruction manual, may cause harmful interference to radio communication.

ELECTROMAGNETIC COMPATIBILITY

This product conforms with the protection requirements of Council Directive 89/336/EEC of 3rd May 1989 (EMC) on the approximation of the laws of the Member States relating to electromagnetic compatibility.

ENVIRONMENTAL INFORMATION

Material Content

The material content of the MTR2000 is 16% of the product it replaces.

The following table provides a rough estimate of the material content of the station. The actual percentages vary in relation to the station configuration. The power supply is not included in the percentage of weights since the end-of -life value is dependent on the model of supply used in the station.

Most of the Material categories are self explanatory. Copper bearing materials:

- include any material that contains copper.
- primarily consist of circuit boards.
- exclude cables (separate Material category).

Material	% by weight
Aluminum	92%
Steel	2%
Copper Bearing	4%
Cable	1%
Polycarbonate	1%

Beryllium Oxide has been used in the power amplifier. Beryllium Oxide should not be subjected to any process which will generate dust.

Features

Over 92% of the station is made of aluminum, one of the most recycled materials commonly available today. In addition, the aluminum used in the station consists of 90-95% recycled content.

Plastic use has been minimized since the market for recycled engineering plastics is limited. The plastic which has been used for the front panel is a relatively clean and pure resin.

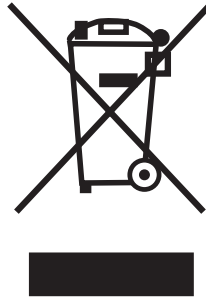
Disposal of your Electronic and Electric Equipment

Please do not dispose of Electronic and Electric Equipment or Electronic and Electric Accessories with your household waste. In some countries or regions, collection systems have been set up to handle waste of electrical and electronic equipment.

In European Union countries, please contact your local equipment supplier representative or service center for information about the waste collection system in your country.

Disposal Guideline

The following symbol on a Motorola product indicates that the product should not be disposed of with household waste.





MTR2000™

Base Station, Repeater and Receiver

For Analog Conventional, and Trunking Systems


800/900 MHz

Table of Contents

Model & Option Selection Procedure	xix
Product Maintenance Philosophy	xxv
Scope of Manual	xxv
Documentation Conventions	xxvi
Service and Replacement Modules	xxvii
General Safety Information	xxix
Performance Specifications – 800MHz Station	xxx
Performance Specifications – 900MHz Station	xxxii
Glossary	xxxiv

DESCRIPTION

DESCRIPTION	68P81096E36
Introduction	1
Flexible Mechanical Design	1
Electrical Design	2
Trunking Capability	2
Summary of Operating Features	3
Station Components	4

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Functional Theory Of Operation	5
Transmitter Circuitry Operation	5
Receiver Circuitry Operation	7
Station Control Module Operation	8
Wireline Interface Board Operation	9
Auxiliary I/O Board	10
Power Supply Module Operation	11

INSTALLATION

INSTALLATION

68P81096E37

Pre-installation Considerations	1
Installation Overview	1
Environmental Conditions at Intended Installation Site	2
Equipment Ventilation	3
AC Input Power Requirements	4
Equipment Mounting Methods	5
Site Grounding and Lightning Protection	10
Recommended Tools and Equipment	11
Equipment Unpacking and Inspection	11
Mechanical Installation	12
Unpacking Equipment	12
Mounting Procedures	16
Board Configuration	22
4-Wire Wireline Interface Board	22
4-Wire Euro Wireline Interface Board	22
Auxiliary I/O Board	24
Electrical Connections	27
Power Supply Connections	28
RF Antenna Connections	31
System Cable Connections	32
Telephone Line Connections	38
Station Maintenance Connections	42
Post Installation Checklist	43
Applying Power	43
Verifying Proper Operation	44
Optimizing	47
Optimizing Tasks	47
Copying Station Codeplug Data to a PC-compatible Computer	47
Installing Station Hardware Options	48

STATION OPERATION

STATION OPERATION	68P81096E38
Description	1
LED Indicators.	2
External Device Connection	3
Service Connections.	3

MAINTENANCE AND TROUBLESHOOTING

ROUTINE MAINTENANCE	68P81096E39
Introduction	1
Recommended Test Equipment.	2
Calibrating Station Reference Oscillator.	2
 TROUBLESHOOTING	 68P81094E61
Introduction	1
Recommended Test Equipment.	2
Troubleshooting Procedures	3
Module Replacement Procedures	20

STATION MODULES

RECEIVER CIRCUITRY

RECEIVER MODULE,
Models CLN1215 (806 to 825 MHz) and CLF1270 (896 to 915 MHz) **68P81094E62**

Description 1

Inputs and Output Connections 2

Functional Theory of Operation. 3

TRANSMITTER CIRCUITRY

EXCITER MODULE,
Models CLN1235 (851 to 870 MHz) and CLF1280 (935 to 941 MHz) **68P81094E63**

Description 1

Input and Output Connections 2

Functional Theory of Operation. 3

75 W POWER AMPLIFIER MODULE,
Models CLN1232 (851 to 870 MHz) and CLF1260 (935 to 941 MHz) **68P81094E64**

Description 1

Identification of Inputs/Outputs 2

Functional Theory of Operation. 3

STATION CONTROL CIRCUITRY

STATION CONTROL MODULE
Model CLN1465 **68P81096E32**

Description 1

Indicators and Input/Output Connections 3

Functional Theory of Operation. 4

WIRELINE CIRCUITRY**4 WIRE, EURO WIRELINE INTERFACE BOARD****Model CLN1204** **68P81096E28**

Description	1
Inputs and Output Connections	2
Functional Theory of Operation	3

4 WIRE, WIRELINE INTERFACE BOARD**Model CLN1203** **68P81096E29**

Description	1
Inputs and Output Connections	2
Functional Theory of Operation	3

8 WIRE, WIRELINE INTERFACE BOARD**Model CLN1205** **68P81096E31**

Description	1
Inputs and Output Connections	2
Functional Theory of Operation	3

AUXILIARY I/O CIRCUITRY**AUXILIARY I/O BOARD****Model CLN1206** **68P81096E53**

Description	1
Input and Output Connections	2
Functional Theory of Operation	3

STATION BACKPLANE**BACKPLANE INTERCONNECT BOARD****Model CLN1202** **68P81096E46**

Description	1
Location of Backplane Connectors	3
Backplane Connectors Information	4

POWER SUPPLIES

500 W POWER SUPPLY, AC with DC Backup Connector	
Models CLN1220 and DLN6458	68P81096E33
Description	1
Performance Specifications	3
Identification of Inputs/Outputs	4
Functional Theory of Operation	5
500 W POWER SUPPLY, AC with DC Backup Connector	
Model DLN6622	68P81011Y31
Description	1
Performance Specifications	2
Identification of Inputs/Outputs	3
Functional Theory of Operation	4
500 W POWER SUPPLY, DC-Only	
Model CLN1222	68P81096E51
Description	1
Performance Specifications	2
Identification of Inputs/Outputs	3
Functional Theory of Operation	4

SATELLITE RECEIVER

SATELLITE RECEIVER	68P81096E44
Description	1
Input and Output Connections	3

ANCILLARY EQUIPMENT

ANTENNA RELAY MODULE

Model CLN6680	68P81096E41
Description	1
Inputs and Output Connections	2
Option Complement	7
Performance Specifications	7
Mounting Location	8
Functional Theory of Operation	9

EXTERNAL DOUBLE CIRCULATOR MODULE

Models CLN1279 (800MHz) and CLF1290 (900MHz)	68P81094E71
Description	1
Inputs and Output Connections	2
Options Complement	4
Performance Specifications	5
Functional Theory of Operation	6

DUPLEXER MODULE

Models TDF6980 (800MHz) and TDF6542 (900MHz)	68P81095E16
Description	1
Inputs and Output Connectors	2
Performance Specifications	5
Typical Interconnection	7

ZETRON REPEATER PANEL

Model TDN9946	68P81095E71
Description	1
Option Information	4

List of Figures

DESCRIPTION

DESCRIPTION	68P81096E36
Figure 1. MTR2000 Station	1
Figure 2. MTR2000 Station Components	4
Figure 3. Functional Block Diagram	14

INSTALLATION

INSTALLATION	68P81096E37
Figure 1. Floor-mount Cabinet – Dimensions and Clearances	7
Figure 2. Modular Rack – Dimensions and Clearances	9
Figure 3. Unpacking Procedure - Station	13
Figure 4. Unpacking Procedures - Floormount Cabinets	15
Figure 5. Slide Rail Installation; Option X968AA	19
Figure 6. Slide Rail Installation; Option X346AB	21
Figure 7. CLN1203 Wireline Interface Board Jumper Settings	22
Figure 8. CLN1204 Wireline Interface Board Jumper Settings	23
Figure 9. CLN1206 Auxiliary I/O Board Jumpers	24
Figure 10. Location of External Connectors at Rear of Station	28
Figure 11. Making Connections to Storage Battery	30

STATION OPERATION

STATION OPERATION	68P81096E38
Figure 1. Front Panel LEDs	2
Figure 2. SCM Connectors	3

MAINTENANCE AND TROUBLESHOOTING

ROUTINE MAINTENANCE 68P81096E39

Figure 1.	Front Panel Removal	3
-----------	-------------------------------	---

TROUBLESHOOTING 68P81094E61

Figure 1.	Procedure 1 – Routine Site Visit	5
Figure 2.	Procedure 2 – Station Troubleshooting	7
Figure 3.	Front Panel Removal	8
Figure 4.	SCM Service Connectors	9
Figure 5.	Service Mic Buttons	11
Figure 6.	Test Equipment Setup for Verifying Transmitter Circuitry	14
Figure 7.	Test Equipment Setup for Verifying Receiver Circuit	18

STATION MODULES

RECEIVER CIRCUITRY

RECEIVER MODULE, Models CLN1215 (806 to 825 MHz) and CLF1270 (896 to 915 MHz) 68P81094E62

Figure 1.	800/900 MHz Receiver Module Inputs/Outputs	2
Figure 2.	800/900 MHz Receiver Module Functional Block Diagram	7

TRANSMITTER CIRCUITRY

EXCITER MODULE, Models CLN1235 (851 to 870 MHz) and CLF1280 (935 to 941 MHz) 68P81094E63

Figure 1.	800/900 MHz Exciter Module Input/Output	2
Figure 2.	800/900 MHz Exciter Module Functional Block Diagram	5

75 W POWER AMPLIFIER MODULE, Models CLN1232 (851 to 870 MHz) and CLF1260 (935 to 941 MHz) 68P81094E64

Figure 1.	800/900 MHz 75 W Power Amplifier Module Input/Output	2
Figure 2.	800/900 MHz 75 W Power Amplifier Module Functional Block Diagram	5

STATION CONTROL CIRCUITRY

STATION CONTROL MODULE

Model CLN1465 68P81096E32

Figure 1.	Station Control Module Indicators and Input/Output Connections	3
Figure 2.	Station Control Module Functional Block Diagram – Supply Voltage Circuitry	14
Figure 3.	Station Control Module Functional Block Diagram – Station Control Circuitry	15

WIRELINE CIRCUITRY

4 WIRE, EURO WIRELINE INTERFACE BOARD

Model CLN1204 68P81096E28

Figure 1.	CLN1204 Wireline Interface Board Jumpers and Input/Output Connections	2
Figure 2.	CLN1204 Wireline Interface Board Jumpers Settings	4
Figure 3.	CLN1204; 2-Wire Voice Audio Path Functional Block Diagram	7
Figure 4.	CLN1204; 4-Wire Voice Audio Path Functional Block Diagram	7

4 WIRE, WIRELINE INTERFACE BOARD

Model CLN1203 68P81096E29

Figure 1.	CLN1203 Wireline Interface Board Jumpers and Input/Output Connections	2
Figure 2.	CLN1203 Wireline Interface Board Jumpers Settings	4
Figure 3.	CLN1203; 2-Wire Voice Audio Path Functional Block Diagram	7
Figure 4.	CLN1203; 4-Wire Voice Audio Path Functional Block Diagram	7

8 WIRE, WIRELINE INTERFACE BOARD

Model CLN1205 68P81096E31

Figure 1.	CLN1205 Wireline Interface Board Jumpers and Input/Output Connections	2
Figure 2.	CLN1205; 8 Wire Voice Audio Data Path Functional Block Diagram	7

AUXILIARY I/O CIRCUITRY

AUXILIARY I/O BOARD

Model CLN1206

68P81096E53

Figure 1.	CLN1206 Auxiliary I/O Input/Output Connections	2
Figure 2.	CLN1206 Auxiliary I/O Board Jumpers	11
Figure 3.	CLN1206 Auxiliary I/O Board Functional Block Diagram	14

STATION BACKPLANE

BACKPLANE INTERCONNECT BOARD

Model CLN1202

68P81096E46

Figure 1.	Backplane Interconnect Board	2
Figure 2.	Station Backplane Connector Locations	3
Figure 3.	Backplane Rear Connector Pinout Information	11

POWER SUPPLIES

500 W POWER SUPPLY, AC with DC Backup Connector

Models CLN1220 and DLN6458

68P81096E33

Figure 1.	Model CLN1220/DLN6458 Power Supply Module Input/Output Connections	4
Figure 2.	Model CLN1220/DLN6458 500 W Power Supply Functional Block Diagram	7

500 W POWER SUPPLY, AC with DC Backup Connector

Models DLN6622

68P81011Y31

Figure 1.	Model DLN6622 Power Supply Module Input/Output Connections	3
Figure 2.	Model DLN6622 500 W Power Supply Functional Block Diagram	7

500 W POWER SUPPLY, DC-Only

Model CLN1222

68P81096E51

Figure 1.	Model CLN1222 DC-Only Power Supply Module Input/Output Connections	3
Figure 2.	Model CLN1222 DC-Only 500 W Power Supply Functional Block Diagram	5

SATELLITE RECEIVER

SATELLITE RECEIVER	68P81096E44
Figure 1.	Typical MTR2000 Satellite Receiver 1
Figure 2.	Satellite Receiver Input/Output Connections 3
Figure 3.	Satellite Receiver Connections Within a Voting System 4
Figure 4.	Satellite Receiver Functional Block Diagram 5

ANCILLARY EQUIPMENT

ANTENNA RELAY MODULE

Model CLN6680

68P81096E41

Figure 1.	Typical Antenna Relay Module – Inputs/Outputs	2
Figure 2.	Antenna Relay Only – Cable Kits	3
Figure 3.	Antenna Relay and External Preselector – Cable Kits	4
Figure 4.	Antenna Relay and External Double Circulator– Cable Kits	5
Figure 5.	Antenna Relay, External Preselector, and External Double Circulator– Cable Kits	6
Figure 6.	Mounting Position for Antenna Relay Module	8
Figure 7.	Functional Block Diagram and Interconnect Diagram for Antenna Relay Module	9

EXTERNAL DOUBLE CIRCULATOR MODULE

Models CLN1279 (800MHz) and CLF1290 (900MHz)

68P81094E71

Figure 1.	800/900 MHz Double Circulator Module Mounted in Peripheral Tray – Inputs/Outputs	2
Figure 2.	External Double Circulator Only – Cable Kits	3
Figure 3.	Functional Block Diagram and Interconnect Diagram Double Circulator Module	6

DUPLEXER MODULE

Models TDF6980 (800MHz) and TDF6542 (900MHz)

68P81095E16

Figure 1.	Typical 800/900 MHz Duplexer Module	1
Figure 2.	800/900 MHz Duplexer Module – Input/Output Connectors	2
Figure 3.	Duplexer Only – Cable Kits	3
Figure 4.	Duplexer and External Double Circulator– Cable Kits	4
Figure 5.	Typical Duplexer Interconnect Diagram	7

ZETRON REPEATER PANEL

Model TDN9946

68P81095E71

Figure 1.	Zetron Repeater Tone Panel	1
Figure 2.	MTR2000 to Zetron Panel - Cable Connection	2

List of Tables

INSTALLATION

INSTALLATION	68P81096E37
Table 1.	Configuring Auxiliary I/O, Input GPI_14 Function 25
Table 2.	Configuring Auxiliary I/O, Output GPO_14 Function 25
Table 3.	Configuring Auxiliary I/O, Output GPO_15 Function 26
Table 4.	System Connector – Commonly Used Pins 33
Table 5.	Summary of Auxiliary Inputs/Outputs at the System Connector 34
Table 6.	J5 System Connector, Row A Pins 35
Table 7.	J5 System Connector, Row B Pins 36
Table 8.	J5 System Connector, Row C Pins 37
Table 9.	Type 5 and “3002” Phone Line Specifications 39
Table 10.	Wireline Connector Line Pair Assignments 40
Table 11.	System Types vs. Wireline Circuit Matrix 41
Table 12.	Station Maintenance Connections on the SCM 42

MAINTENANCE AND TROUBLESHOOTING

ROUTINE MAINTENANCE	68P81096E39
Table 1.	Recommended Intervals for Calibrating Station Reference Oscillator 2

STATION MODULES**AUXILIARY I/O CIRCUITRY****AUXILIARY I/O BOARD****Model CLN1206****68P81096E53**

Table 1.	General Purpose Inputs.	5
Table 2.	SPI Bus Input Circuitry Signals	6
Table 3.	Option Interrupt Request Signal	6
Table 4.	SPI Bus Output Circuitry Signals.	8
Table 5.	General Purpose Output Electrical Characteristics	9
Table 6.	Configuring Input GPI_14 Function	12
Table 7.	Configuring Output GPO_14 Function	12
Table 8.	Configuring Output GPO_15 Function	12
Table 9.	Configuring Additional GPOs	13

STATION BACKPLANE**BACKPLANE INTERCONNECT BOARD****Model CLN1202****68P81096E46**

Table 1.	Assigned Connector Number Vs. Function/Location Information	4
Table 2.	Backplane Signal Description	5
Table 3.	J5 System Connector	12
Table 4.	J4 Wireline Connector	13
Table 5.	J1 Option1 Connector	14
Table 6.	J2 Option2 Connector	15
Table 7.	J3 Controller Connector	16

POWER SUPPLIES

500 W POWER SUPPLY, AC with DC Backup Connector
Models CLN1220 and DLN6458 **68P81096E33**

Table 1. CLN1220/DLN6458 Power Supply Module Performance Specifications 3

500 W POWER SUPPLY, AC with DC Backup Connector
Models DLN6622 **68P81011Y31**

Table 1. DLN6622 Power Supply Module Performance Specifications 2

500 W POWER SUPPLY, DC-Only
Model CLN1222 **68P81096E51**

Table 1. CLN1222 DC-Only Power Supply Module Performance Specifications 2

ANCILLARY EQUIPMENT

ANTENNA RELAY MODULE
Model CLN6680 **68P81096E41**

Table 1. Antenna Relay Option X371 AG Complement 7

Table 2. Performance Specifications for Antenna Relay 7

EXTERNAL DOUBLE CIRCULATOR MODULE
Models CLN1279 (800 MHz) and CLF1290 (900 MHz) **68P81094E71**

Table 1. 800/900 MHz Double Circulator Option X676AV Complement 4

Table 2. Performance Specifications for CLN1279 Double Circulator 5

Table 3. Performance Specifications for CLF1290 Double Circulator 5

DUPLEXER MODULE
Models TDF6980 (800 MHz) and TDF6542 (900 MHz) **68P81095E16**

Table 1. Performance Specifications for 800MHz TDF6980 Duplexer Module 5

Table 2. Performance Specifications for 900MHz TDF6542 Duplexer Module 6

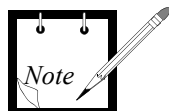
MODEL AND OPTION SELECTION PROCEDURE (INCLUDES MODEL/OPTION COMPLEMENTS)

The following equipment ordering process is used by the sales representative to equip an 800 MHz or 900MHz station with the proper hardware and firmware for specific system types and customer-defined options and features. This process is described here, showing the structure and contents of the various models and options.

1

The Factory ID Model numbers are:

MTR2000...	Factory ID Model No.	Station Description
Base Stations or Repeaters	T5544, T5766	MTR2000 Station
Receivers	T5731, T5769	MTR2000 Receiver



Option numbers are used to determine the configuration of an MTR2000 station. The suffixes of these option numbers (i.e., the last 2 characters) may change.

The sales model includes the following items which are **common to all stations**:

- Station Control Module.
- Backplane Interconnect Board.
- Backplane hardware.
- Station chassis hardware.
- Front panel.
- Cables.

For Receivers, the sales model determines that the:

- 250W Power Supply module is included in the station, Option X30AM.

If the station is a **Base Station or a Repeater**, the power/frequency option is now selected. The following table shows the available power/frequency options:

	Output Power
Frequency Range	75 W
851 to 870 MHz	Option X450AB
935 to 941 MHz	Option X460AB

For Base Stations and Repeaters, the power/frequency option determines which:

- Power Supply module is included in the station; X30AL for the 500W power supply.
- Power Amplifier module (based on frequency band and power level) is included in the station.
- Exciter module (based on frequency band) is included in the station.
- Receiver module (based on frequency band) is included in the station;
Option X335AD for an 800MHz station, or
Option X336AG for a 900MHz station.

OR

If the station is a **Receiver**, the frequency option is now selected. The frequency option is determined based on the frequency specified by the customer. The following table shows the available frequency options:

Frequency Range	Receiver Option
806 to 825 MHz	Option X600AB
896 to 915 MHz	Option X600AB

The frequency option determines which:

- Receiver module (based on frequency band) is included in the station;
Option X335AD for an 800MHz station, or
Option X336AG for a 900MHz station.

3

A System Software Option must be selected **for Base Stations, Repeaters and Receivers** as follows:

System Type	Software Option
Conventional Analog Operation	X597AF
Conventional Analog Receiver	X597AG
6809 Trunking Analog Operation	X997AE
6809 Trunking Analog Receiver	X997AF

If the station is a Receiver, go to step 5.

For Trunking Analog Operation the software option determines that the Auxiliary I.O Board is included in the station; Option X151AH.

4

A Station Operation Option must be selected as follows:

Operation Type	Operation Option
Repeater Operation	X580AC
Base Station Operation	X622AC

The following lists available options that may be selected in addition to the standard model and options (described in steps 1 through 4).

AVAILABLE OPTIONS FOR 800 MHz STATIONS

Option Category	Option and Complement	
DC-Only Power Supplies	X121AC	500 W DC-Only power supply. When this option is ordered, it automatically replaces Option X30AL.
	CPN6059A	500 W DC Power Supply
	CPN6060A	DC Power Input Cable
	X121AB	250 W DC-Only power supply. When this option is ordered, it automatically replaces Option X30AM.
	CPN6058A	250 W DC Power Supply
	CPN6060A	DC Power Input Cable
Wireline Interface Board (WIB)	X216AC	Add 4-Wire Euro Wireline Interface Board (WIB)
	TTN5066A	4-Wire Euro Wireline Interface Board
	X264AA	Add 4-Wire Wireline Interface Board (WIB) This WIB is the factory default, unless X216AC is ordered.
	TTN5067A	4-Wire Wireline Interface Board
	X144AC	Add 8-Wire Wireline Interface Board (WIB)
	TTN5068A	8-Wire Euro Wireline Interface Board
External Reference	X747AB	Add External Reference
	CKN6682A	External Reference Cable
Antenna Relay	X371AG	Antenna Relay
	CLN6680A	Antenna Relay
External Double Circulator (800MHz)	X676AV	External Double Circulator Module (851 to 870 MHz)
	TLF7320A	Double Circulator (851 to 870MHz)
	TLF7340A	Low Pass Filter
	TRN7751A	Peripheral Tray
	TKN9133A	Cables, Peripheral Tray
	TLN3391A	Circulator Load (heat sink)
External Double Circulator (900MHz)	X676BA	External Double Circulator Module (922 to 960 MHz)
	TLF7330A	Double Circulator (922 to 960MHz)
	TLF7340A	Low Pass Filter
	TRN7751A	Peripheral Tray
	TKN9133A	Cables, Peripheral Tray
	TLN3391A	Circulator Load (heat sink)
Duplexer Module	X182AG	RF Duplexer Module (800MHz)
	TDF6980A	806 to 824MHz Receive 851 to 869MHz Transmit
	X182AH	RF Duplexer Module (900MHz)
	TDF6542A	896 to 902MHz Receive 935 to 941MHz Transmit

AVAILABLE OPTIONS FOR 800 MHz STATIONS

Option Category	Option and Complement	
Mounting Racks	X741AF	76.2 cm (30 in) Modular Rack
	THN6752A	Modular Rack, 16-Rack Unit
	CLN6679A	Rack Mounting Hardware
	X742AF	1.143 m (45 in) Modular Rack
	THN6753A	Modular Rack, 24-Rack Unit
	CLN6679A	Rack Mounting Hardware
Slide Rail (for rackmounted station)	X743AF	1.32 m (52 in) Modular Rack
	THN6754A	Modular Rack, 27-Rack Unit
	CLN6679A	Rack Mounting Hardware
	X968AA	Slides, Motorola Cabinet
	THN6788A	Slide rails for mounting station
	X346AB	Slides, Non-Motorola Cabinet
Indoor Cabinets	CLN6833A	Universal slide rails for mounting station
	X52AF	76.2 cm (30 in) Indoor Cabinet
	THN6701A	30" Indoor Cabinet, 2 Rails
	TTN5040A	Grommet Channel Kit
	X308AD	1.168 m (46 in) Indoor Cabinet
	THN6702A	46" Indoor Cabinet, 2 Rails
Trunking Cables	TTN5040A	Grommet Channel Kit
	X180AC	1.524 m (60 in) Indoor Cabinet
	THN6703A	60" Indoor Cabinet, 2 Rails
	TTN5040A	Grommet Channel Kit
	3083765X04	7.62 m (25 ft) Trunking Cable
	3083765X05	15.24 m (50 ft) Trunking Cable
Miscellaneous	3083765X06	22.86 m (75 ft) Trunking Cable
	3083765X07	30.48 m (100 ft) Trunking Cable
	HSN1000	External Speaker
	0185180U01	External Speaker Cable
	GMN6147	Service Microphone

FOREWORD

Product Maintenance Philosophy

Due to the high percentage of surface-mount components and multi-layer circuit boards, the maintenance philosophy for this product is one of Field Replaceable Unit (FRU) substitution. The station is comprised of self-contained modules (FRUs) which, when determined to be faulty, may be quickly and easily replaced with a known good module to bring the equipment back to normal operation. The faulty module must then be shipped to the Motorola System Support Center for further troubleshooting and repair to the component level.

The System Support Center can be contacted at:

Address	Phone No.	FAX No.
Motorola Systems Support Center 1311 East Algonquin Rd. Schaumburg IL, 60196, USA	(800) 925-0911	(847) 576-2172

For other issues call:

(800) 448-3245

or

(847) 576-7300

Scope of Manual

This manual is intended for use by experienced technicians familiar with similar types of equipment. In keeping with the maintenance philosophy of Field Replaceable Units (FRU), this manual contains functional information sufficient to give service personnel an operational understanding of all FRU modules, allowing faulty FRU modules to be identified and replaced with known good FRU replacements.

The information in this manual is current as of the printing date. Changes which occur after the printing date are incorporated by Instruction Manual Revisions (SMR). These SMRs are added to the manuals as the engineering changes are incorporated into the equipment.

Documentation Conventions

Documentation conventions are used in this manual to highlight certain information.

The area to the left of the text column contains key words and graphic symbols which allow the reader to quickly identify desired information.

The following text highlight symbols are used:



A note symbol indicates important information that helps improve the described function.



CAUTION

A caution symbol indicates a potential problem, unless the proper actions are taken. A caution also explains how to avoid the problem.



WARNING

A WARNING symbol indicates the potential for personal injury or serious system degradation unless the proper actions are taken. A WARNING also explains how to avoid the problem.



IMPORTANT

An IMPORTANT symbol indicates the potential for damaging the station unless the proper actions are taken. An IMPORTANT note also explains how to avoid the problem.



This graphic symbol appears in this manual and on the station front panel (and other station surfaces) as a reminder that the station can become extremely hot during normal station operation. Turn off all power to the station, and wait until sufficiently cool before touching the station.

Service and Replacement Modules

For complete information on ordering FRU replacement modules, or instructions on how to return faulty modules for repair, contact the appropriate facility:

	Address	Phone No.	FAX No.																																				
United States	Motorola Inc. Radio Products Services Division 2200 Galvin Dr. Elgin, IL, 60123, USA	(800) 422-4210	(800) 622-6210																																				
Canada																																							
International		(847) 538-8023	(847) 576-3023																																				
Mexico	Motorola de Mexico Huatabampo No. 50 APDO Postal 71064 Mexico DF 06700	(525) 584-4560	(525) 584-6843																																				
Asia	Motorola Singapore Parts Centre 1302 Lor 1 Toa Payoh Siong Hoe Ind Bldg. #01-03/04 Singapore 1231	(65) 353-0311	(65) 353-9152																																				
Australia & New Zealand	Motorola Australia Ltd. 666 Wellington Rd. Victoria 3170 Melbourne Australia	(61) 3 566-7766	(61) 3 566-7910																																				
Japan	Nippon Motorola Ltd. 3-20-1 Ninomi Azabu Minato-Ku Tokyo 106 Japan	(81) 3 3440 3311	(81) 3 3440 3505																																				
Europe, Mideast & Africa	Motorola GmbH Heinrich - Hertz Strasse 1 D-65232 Taunusstein 4 Germany	0049-6128-702164	0049-6128-704903																																				
OR Local phone numbers are available for the following European countries: <table> <tr> <td>Austria:</td><td>06 60 75 41</td><td>Italy:</td><td>16 78 77 387</td></tr> <tr> <td>Belgium:</td><td>08 00 72 471</td><td>Luxemburg:</td><td>08 00 23 27</td></tr> <tr> <td>Denmark:</td><td>80 01 55 72</td><td>Netherlands:</td><td>60 22 45 13</td></tr> <tr> <td>Finnland:</td><td>08 00 11 49 10</td><td>Norway:</td><td>80 01 11 15</td></tr> <tr> <td>France:</td><td>08 00 90 30 90</td><td>Portugal:</td><td>05 05 49 35 70</td></tr> <tr> <td>Germany:</td><td>01 30 18 75 24</td><td>Spain:</td><td>90 09 84 902</td></tr> <tr> <td>Greece:</td><td>00 80 04 91 29 020</td><td>Sweden:</td><td>02 07 94 307</td></tr> <tr> <td>UK:</td><td>08 00 96 90 95</td><td>Switzerland:</td><td>08 00 55 30 82</td></tr> <tr> <td>Ireland:</td><td>18 00 55 50 21</td><td>Iceland:</td><td>80 08 147</td></tr> </table>				Austria:	06 60 75 41	Italy:	16 78 77 387	Belgium:	08 00 72 471	Luxemburg:	08 00 23 27	Denmark:	80 01 55 72	Netherlands:	60 22 45 13	Finnland:	08 00 11 49 10	Norway:	80 01 11 15	France:	08 00 90 30 90	Portugal:	05 05 49 35 70	Germany:	01 30 18 75 24	Spain:	90 09 84 902	Greece:	00 80 04 91 29 020	Sweden:	02 07 94 307	UK:	08 00 96 90 95	Switzerland:	08 00 55 30 82	Ireland:	18 00 55 50 21	Iceland:	80 08 147
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UK:	08 00 96 90 95	Switzerland:	08 00 55 30 82																																				
Ireland:	18 00 55 50 21	Iceland:	80 08 147																																				

Station FRU Components

The following Field Replacement Units (FRUs) can be ordered for an MTR2000 UHF station:

	Module Description	FRU Kit #
800MHz	Receiver Module (806 to 825 MHz) - with varactor preselector	CLN1215
	Exciter Module (851 to 870 MHz)	CLN1235
	Power Amplifier (75 W, 851 to 870 MHz)	CLN1232
900MHz	Receiver Module (896 to 915 MHz) - with varactor preselector	CLF1270
	Exciter Module (935 to 941 MHz)	CLF1280
	Power Amplifier (75 W, 935 to 941 MHz)	CLF1260
800MHz and 900MHz	Station Control Module	CLN1465
	Station Backplane Board	CLN1202
	Power Supply (250 W), AC with DC Battery Connect	CLN1221
	Power Supply (500 W), AC with DC Battery Connect	CLN1220
	Power Supply (250 W), DC-Only	CLN1223
	Power Supply (500 W), DC-Only	CLN1222
800MHz and 900MHz	4-Wire Wireline Interface Board	CLN1203
	4-Wire Euro Wireline Interface Board	CLN1204
	8-Wire Wireline Interface Board	CLN1205
	Auxiliary I/O Board	CLN1206
	Antenna Relay	CLN6680
	External Double Circulator (851 to 870 MHz)	CLN1279
800MHz	Duplexer Module (800MHz)	TDF6980
900MHz	External Double Circulator (922 to 960 MHz)	CLF1290
	Duplexer Module (900MHz)	TDF6542
800MHz and 900MHz	Zetron Repeater Panel	TDN9946

Need help to identify a part number?

If help is required to identify a part number, call:

(847) 538-0021

GENERAL SAFETY INFORMATION

The United States Department of Labor, through the provisions of the Occupational Safety and Health Act of 1970 (OSHA), has established an electromagnetic energy safety standard which applies to the use of this equipment. Proper use of this radio will result in exposure below the OSHA limit. The following precautions are recommended:

- DO NOT operate the transmitter of a mobile radio when someone outside the vehicle is within two feet (0.6 meter) of the antenna.
- DO NOT operate the transmitter of a fixed radio (base station, microwave and rural telephone RF equipment) or marine radio when someone is within two feet (0.6 meter) of the antenna.
- DO NOT operate the transmitter of any radio unless all RF connectors are secure and any open connectors are properly terminated.

In addition:

- DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere.
- All equipment must be properly grounded according to Motorola installation instructions for safe operation.
- All equipment should be serviced only by a qualified technician.
- An operating license may be required to operate this station.

Refer to the appropriate section of the product service manual for additional pertinent safety information.



Some station components can become extremely hot during station operation. Turn off all power to the station, and wait until sufficiently cool before touching the station.

PERFORMANCE SPECIFICATIONS – 800 MHz Station

General

Frequency Range:	806 to 825 MHz Receive; 851 to 870 MHz Transmit (821 to 825 MHz NPSPAC Narrow i-f currently not supported.)														
Number of Channels:	32														
Frequency Generation:	Synthesized														
Power Supply Type:	Switching														
Power Supply Input Voltage:	85 to 264 Vac														
Power Supply Input Frequency:	47 to 63 Hz														
Current Consumption (typical):	<table><thead><tr><th></th><th><u>28 Vdc</u></th><th><u>120 Vac</u></th><th><u>240 Vac</u></th></tr></thead><tbody><tr><td>Standby</td><td>1.24 A</td><td>0.78 A</td><td>0.41 A</td></tr><tr><td>Transmit</td><td>9.9 A</td><td>4.2 A</td><td>2.1 A</td></tr></tbody></table> <p>Note: Current consumption values during transmit are at full rated output.</p>				<u>28 Vdc</u>	<u>120 Vac</u>	<u>240 Vac</u>	Standby	1.24 A	0.78 A	0.41 A	Transmit	9.9 A	4.2 A	2.1 A
	<u>28 Vdc</u>	<u>120 Vac</u>	<u>240 Vac</u>												
Standby	1.24 A	0.78 A	0.41 A												
Transmit	9.9 A	4.2 A	2.1 A												
Temperature Range (ambient):	–30°C (–22°F) to +60°C (+140°F), measured at station														
Dimensions:	48.3 cm (19") x 41.3 cm (16.5") x 13.4 cm (5.25")														
Approximate Weight:	19 kg. (40 lbs.)														
Environmental Specification	I.P. 20														

Transmitter

Power Output:	25 to 75 W
Electronic Bandwidth:	851 to 870 MHz
Intermodulation:	40 dB
Spurious and Harmonic Emissions:	–85 dBc
Deviation:	±5 kHz (25 kHz) ±2.5 kHz (12.5 kHz)
Audio Sensitivity:	–20 dBm to 0 dBm (variable)
Audio Response:	+1, –3 dB from 6 dB per octave pre-emphasis; 300 to 3000 Hz referenced to 1000 Hz at line input
Audio Distortion:	<3% @ 1000 Hz; 60 % RSD
FM Hum and Noise:	50 dB nominal (25 kHz) 45 dB nominal (12.5 kHz)
Frequency Stability:	1 ppm/External Reference

PERFORMANCE SPECIFICATIONS – 800MHz Station (Cont'd)

Receiver

Frequency Range:	806 to 825 MHz (821 to 825MHz NPSPAC Narrow i-f currently not supported.)
Bandwidth:	19 MHz
Channel Spacing:	25 kHz or 12.5kHz
Sensitivity (12 dB SINAD)	0.35 μ V
Selectivity:	80 dB (25 kHz) 70 dB (12.5 kHz)
Intermodulation:	80 dB (25 kHz) 74 dB (12.5 kHz)
Spurious and Image Rejection:	90 dB (85 dB @ first IF)
Off Channel Acceptance:	2 kHz
FM Hum and Noise:	50 dB (25 kHz) 45 dB (12.5 kHz)
Wireline Output:	–20 dBm to 7 dBm
Audio Response (@ Wireline output):	+1, –3 dB line
Audio Distortion:	<3 % @ 1000 Hz; 60 % RSD
Frequency Stability:	1 ppm/External Reference

Due to Motorola's commitment to quality, all specifications subject to change without notice.

PERFORMANCE SPECIFICATIONS – 900 MHz Station

General

Frequency Range:	896 to 915 MHz Receive; 935 to 941 MHz Transmit		
Number of Channels:	32		
Frequency Generation:	Synthesized		
Power Supply Type:	Switching		
Power Supply Input Voltage:	85 to 264 Vac		
Power Supply Input Frequency:	47 to 63 Hz		
Current Consumption (typical):	<u>28 Vdc</u>	<u>120 Vac</u>	<u>240 Vac</u>
	Standby	0.86 A	0.53 A
	Transmit	10.8 A	4.6 A
	Note: Current consumption values during transmit are at full rated output.		
Temperature Range (ambient):	–30°C to +60°C (measured at station)		
Dimensions:	48.3 cm (19“) x 41.3 cm (16.5“) x 13.4 cm (5.25“)		
Approximate Weight:	19 kg. (40 lbs.)		
Environmental Specification	I.P. 20		

Transmitter

Power Output:	20 to 75 W
Electronic Bandwidth:	Full band.
Intermodulation:	40 dB
Spurious and Harmonic Emissions:	–85 dBc
Deviation:	±2.5 kHz (12.5 kHz)
Audio Sensitivity:	–20 dBm to 0 dBm (variable)
Audio Response:	+1, -3 dB from 6 dB per octave pre-emphasis; 300 to 3000 Hz referenced to 1000 Hz at line input
Audio Distortion:	<3% @ 1000 Hz @ line output
FM Hum and Noise:	40 dB nominal (12.5 kHz)
Frequency Stability:	External Reference Required

PERFORMANCE SPECIFICATIONS – 900MHz Station (Cont'd)

Receiver

Frequency Range:	896 to 915 MHz
Bandwidth:	Full band.
Channel Spacing:	12.5 kHz
Sensitivity (12 dB SINAD)	0.35 μ V
Selectivity:	70 dB (12.5 kHz)
Intermodulation:	74 dB (12.5 kHz)
Spurious and Image Rejection:	90 dB (85 dB @ first IF)
Off Channel Acceptance:	2 kHz
FM Hum and Noise:	40 dB (12.5 kHz)
Wireline Output:	–20 dBm to 7 dBm
Audio Response (@ Wireline output):	+1, –3 dB line
Audio Distortion:	<3 % @ 1000 Hz; 60 % RSD
Frequency Stability:	External Reference Required

Due to Motorola's commitment to quality, all specifications subject to change without notice.

GLOSSARY OF TERMS AND ACRONYMS

A

AGC	Automatic Gain Control
Alert tone	Audio signal produced by the station, providing feedback to the user.
ASIC	Application Specific Integrated Circuit
AUX	Auxiliary.

C

CCI	Control Channel Indicate
CDCSS	Continuous Digital-Controlled Squelch Systems (DPL)
CTCSS	Continuous Tone-Controlled Squelch Systems (PL)
CIT	Central Interconnect Terminal. Used to provide telephone interconnect capability in a trunked station.
CIU	Console Interface Unit. Interface between operator console and station to provide encryption/decryption functions.
Clear	Channel modulation type in which voice information is transmitted over the channel using analog modulation.
Code detect	Traditional term used to indicate that a 12kbps CVSD signal is being received on the RF channel.
Conventional	Term used for standard non-trunked radio system (usually using TRC/DC console).
CPI	Console Priority Interface - option allowing console control of a trunked station.

D

DDM	Dual Device Module
DPL	Digital Private Line (See PL)
DSP	Digital Signal Processor, microprocessor specifically designed to perform digital signal processing algorithms.
DVP	Digital Voice Protection, or Digital Voice Privacy, applies to the Vulcan encryption algorithm and the Motorola product in which it is sold.

E

EIA	Electronic Industries Association
E/M	Telephone circuit signalling lines (Ear/Mouth, Ernie/Mary)
EOM	End-Of-Message, 6 kHz signal transmitted at the end of a 12 kbps CVSD signal that is used by the receiving unit for fast muting of the speaker audio for squelch tail elimination.
ESD	Electro Static Discharge
ETS	European Telecommunications Standards

F to H

Failsoft	Trunked station mode entered when central controller fails.
FFSK	Fast FSK
FM	Frequency Modulation
FRU	Field Replaceable Unit.
FSK	Frequency Shift Keying
GPI	General Purpose Input.
GPO	General Purpose Output.
HLGT	High Level Guard Tone

I to L

IC	Integrated Circuit
i-f	intermediate frequency
I/O	Input or Output
IRB	Inbound Recovery Board used with the Trunking Controller
IRQ	Interrupt Request.
ISW	Inbound Signalling Word, data packet transmitted on the inbound Trunking control channel by the subscriber unit when requesting channel allocation.
LLGT	Low Level Guard Tone

M to O

MAN_CS	Manual Channel Select.
MDC	Motorola Data Communications. 1200 or 4800 baud data signalling scheme.
MISO	Master In, Slave Out.
MON	Monitor.
MOSI	Master Out, Slave In.
MRTI	Microprocessor Radio-Telephone Interconnect; a Motorola system that provides a repeater connection to the telephone network (The MRTI allows the radio to access the telephone network when the proper access code is received).
MSK	Minimum Shift Keying
OSW	Outbound Signalling Word, data packet transmitted on the outbound Trunking control channel by the central controller that contains call assignment information for the subscriber.

P

PA	Power Amplifier that transmits final RF signal to transmit antenna
PL	Private-Line tone squelch; a continuous subaudible tone that is transmitted along with the carrier (A radio that has PL on the receive frequency will require both the presence of carrier and the correct PL tone before it will unmute). Also, if there is PL on the transmit frequency, all transmissions by the radio will be modulated with the PL tone. Modulation will be continuous.
PLL	Phase locked loop; a circuit in which an oscillator is kept in phase with a reference, usually after passing through a frequency divider.
PSTN	Public Switched Telephone Network
PTT	Push-to-talk; the switch located on the left side of the radio which, when pressed causes the radio to transmit.

R

RA/RT	Remote Access/Remote Transmit
RAC	Repeater Access Control
RdStat	Receiver Data Status
Repeater	Remote transmit/receive facility that retransmits received signals in order to improve communications range and coverage.
RF	Radio Frequency
RSS	Radio Service Software; the software application used to program and service the station.
RSSI	Received Signal Strength Indicator; a dc voltage proportional to the received RF signal strength.

S

SCM	Station Control Module; station controller.
SINAD	Acronym for the ratio of signal plus noise plus distortion and noise plus distortion.
SMR	Schaumburg Manual Revision
Smart Repeater	Trunking system in which channel control is distributed among several repeaters.
Spectra-TAC	Analog Total Area Coverage voting comparator used to select wide area receivers.
SPI	Serial Peripheral Interface (clock and data lines); simple synchronous serial interface for data transfer between processors and peripheral ICs.
Squelch	Automatic receiver quieting accomplished by muting audio circuits when received signal levels fall below a pre-determined value.
SRAM	Static RAM, memory chip used for scratchpad memory.

T

TCC	Trunking Central Controller; main control unit of the trunked dispatch system; handles ISW and OSW messages to and from radios in the field (See ISW and OSW).
TOC	Turn Off Code; alternating binary pattern used by DPL signalling to provide fast muting of the receiving radio.
TRC	Tone Remote Control
Trunking	Radio control system which permits efficient frequency utilization and enhanced control features.
Type II Trunking	Motorola trunking system which provides extended features.

U, V

UHF	Ultra High Frequency
VHF	Very High Frequency
VCO	Voltage-Controlled Oscillator; an oscillator whereby the frequency of oscillation can be varied by changing a control voltage.
VOX	Voice Operated Switch; Used with MRTI.
VSWR	Voltage Standing Wave Ratio.

W to Z

WCI	Wildcard Input
WCO	Wildcard Output
WFI	Word Frame Interrupt; used to synchronize trunking data messages in a Smart Repeater system.
Wide Area	Wide area systems allow expanded radio coverage by using multiple receivers and/or transmitters.
WL	Wireline
WL Rx	Wireline Receive; information from station rf receiver sent to wireline equipment.
WL Tx	Wireline Transmit; information from wireline equipment sent to station rf transmitter.